

## RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: 10/501,227

Source:

Date Processed by STIC: 8/18/05 <sup>PG 110</sup>

# *ENTERED*



PCT

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/501,227

DATE: 08/18/2005

TIME: 16:46:39

Input Set : A:\600630-21US Seq List.txt

Output Set: N:\CRF4\08182005\J501227.raw

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3 <110> APPLICANT: SAITO, Koichi
5 <120> TITLE OF INVENTION: Estrogen receptor genes and utilization thereof
7 <130> FILE REFERENCE: 600630-21US (561334)
9 <140> CURRENT APPLICATION NUMBER: US 10/501,227
10 <141> CURRENT FILING DATE: 2004-07-12
12 <150> PRIOR APPLICATION NUMBER: JP 2002-004395
13 <151> PRIOR FILING DATE: 2002-01-11
15 <160> NUMBER OF SEQ ID NOS: 48
17 <210> SEQ ID NO: 1
18 <211> LENGTH: 506
19 <212> TYPE: PRT
20 <213> ORGANISM: Blue Gill
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25 Met Glu Glu Leu Arg Ser Ser Val Pro Ser Ser Gln Gln Pro Val Pro
26 20 25 30
27 Arg Glu Asp Gln Cys Ala Thr Ser Asp Glu Ser Tyr Ser Val Gly Glu
28 35 40 45
29 Ser Gly Ala Gly Ala Arg Gly Phe Glu Met Ala Lys Glu Met Arg Phe
30 50 55 60
31 Cys Ala Val Cys Ser Asp Tyr Ala Ser Gly Tyr His Tyr Gly Val Trp
32 65 70 75 80
33 Ser Cys Glu Gly Cys Lys Ala Phe Phe Lys Arg Ser Ile Gln Gly His
34 85 90 95
35 Asn Asp Tyr Met Cys Pro Ala Thr Asn Gln Cys Thr Ile Asp Arg Asn
36 100 105 110
37 Arg Arg Lys Ser Cys Gln Ala Cys Arg Leu Arg Lys Cys Tyr Glu Val
38 115 120 125
39 Gly Met Met Lys Gly Gly Val Arg Lys Asp Arg Gly Arg Val Leu Arg
40 130 135 140
41 Arg Asp Lys Arg Arg Ala Gly Thr Asn Asp Arg Glu Lys Ala Ser Lys
42 145 150 155 160
43 Asp Leu Glu Tyr Lys Thr Val Pro Pro Gln Asp Arg Arg Lys His Ser
44 165 170 175
45 Ser Ser Ser Ser Ala Gly Gly Gly Gly Lys Ser Ser Val Thr Gly
46 180 185 190
47 Met Ser Pro Asp Gln Val Leu Leu Leu Leu Gln Gly Ala Glu Pro Pro
48 195 200 205
49 Met Leu Cys Ser Arg Gln Lys Leu Ser Arg Pro Tyr Thr Glu Val Thr
50 210 215 220
51 Ile Met Thr Leu Leu Thr Ser Met Ala Asp Lys Glu Leu Val His Met
52 225 230 235 240

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53 Ile Thr Trp Ala Lys Lys Leu Pro Gly Phe Leu Gln Leu Ser Leu His
54           245           250           255
55 Asp Gln Val Gln Leu Leu Glu Ser Ser Trp Leu Glu Val Leu Met Ile
56           260           265           270
57 Gly Leu Ile Trp Arg Ser Ile His Cys Pro Gly Lys Leu Ile Phe Ala
58           275           280           285
59 Gln Asp Leu Ile Leu Asp Arg Asn Glu Gly Asp Cys Val Glu Gly Phe
60           290           295           300
61 Val Glu Ile Phe Asp Met Leu Leu Ala Thr Ala Ser Arg Phe Arg Met
62 305           310           315           320
63 Leu Lys Leu Lys Pro Glu Glu Phe Val Cys Leu Lys Ala Ile Ile Leu
64           325           330           335
65 Leu Asn Ser Gly Ala Phe Ser Phe Cys Thr Gly Thr Met Glu Pro Leu
66           340           345           350
67 His Asn Ser Met Ala Val Gln Asn Met Leu Asp Thr Ile Thr Asp Ala
68           355           360           365
69 Leu Ile His His Ile Ser Gln Ser Gly Cys Ser Ala Gln Gln Gln Ser
70           370           375           380
71 Arg Arg Gln Ala Gln Leu Leu Leu Leu Ser His Ile Arg His Met
72 385           390           395           400
73 Ser Asn Lys Gly Met Glu His Leu Tyr Ser Met Lys Cys Lys Asn Lys
74           405           410           415
75 Val Pro Leu Tyr Asp Leu Leu Leu Glu Met Leu Asp Ala His Arg Ile
76           420           425           430
77 His Arg Pro Asp Arg Pro Ala Gln Phe Trp Ser Gln Ala Asp Gly Glu
78           435           440           445
79 Pro Pro Phe Ile Asn Asn Asn Asn Ser Ser Asn Ser Gly Ser Asn Gly
80           450           455           460
81 Gly Val Ser Ser Ser Val Gly Ser Ser Ser Gly Pro Arg Val Asn His
82 465           470           475           480
83 Glu Ser Pro Ser Arg Gly Pro Thr Gly Pro Gly Val Leu Gln Tyr Gly
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100 ccctctcagt gacatgtacc ctgaagagag cagggggtcc ggaggggtag ccactgtgga      180
101 ctttctggaa gggacctacg attatgccgc cccaccctc gccccgactc ctctttacag      240
102 ccagtctggc tactactctg tacctctgga cgcccaagg ccaccctcag atggcagcct      300
103 tcagtccctg ggcagcgggc ctaccagtcc tcttgtgttt gtgccgtcca gcccagact      360
104 cagccccttt atgcaccgcg ccagccacca ctatctggaa accacctcaa caccgtcta      420

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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 105 | cag | atg | agt | ctg | aaa | gac | tgg | tta | tta | gga | aaa | gaa | agg | acg | gtg | gtg | 468  |
| 106 |     | Met | Ser | Leu | Lys | Asp | Trp | Leu | Leu | Gly | Lys | Glu | Arg | Thr | Val | Val |      |
| 107 |     | 1   |     |     |     | 5   |     |     |     |     | 10  |     |     |     |     | 15  |      |
| 108 | acc | atg | gag | gag | ctg | agg | tct | agt | gtc | cca | tcc | agc | cag | cag | cca | gtt | 516  |
| 109 | Thr | Met | Glu | Glu | Leu | Arg | Ser | Ser | Val | Pro | Ser | Ser | Gln | Gln | Pro | Val |      |
| 110 |     |     |     |     | 20  |     |     |     |     | 25  |     |     |     |     | 30  |     |      |
| 111 | ccc | aga | gag | gac | cag | tgt | gcc | acc | agt | gat | gag | tcc | tat | agt | gtg | ggg | 564  |
| 112 | Pro | Arg | Glu | Asp | Gln | Cys | Ala | Thr | Ser | Asp | Glu | Ser | Tyr | Ser | Val | Gly |      |
| 113 |     |     |     | 35  |     |     |     |     | 40  |     |     |     |     | 45  |     |     |      |
| 114 | gag | tca | ggg | gct | gga | gcc | agg | ggg | ttt | gag | atg | gcc | aag | gag | atg | cgt | 612  |
| 115 | Glu | Ser | Gly | Ala | Gly | Ala | Arg | Gly | Phe | Glu | Met | Ala | Lys | Glu | Met | Arg |      |
| 116 |     |     | 50  |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |      |
| 117 | ttc | tgt | gct | gtg | tgc | agt | gac | tat | gcc | tct | ggg | tac | cac | tac | ggg | gtg | 660  |
| 118 | Phe | Cys | Ala | Val | Cys | Ser | Asp | Tyr | Ala | Ser | Gly | Tyr | His | Tyr | Gly | Val |      |
| 119 |     | 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     |      |
| 120 | tgg | tcc | tgt | gaa | ggc | tgt | aag | gcc | ttc | ttt | aag | agg | agc | atc | cag | ggg | 708  |
| 121 | Trp | Ser | Cys | Glu | Gly | Cys | Lys | Ala | Phe | Phe | Lys | Arg | Ser | Ile | Gln | Gly |      |
| 122 | 80  |     |     |     |     | 85  |     |     |     |     | 90  |     |     |     | 95  |     |      |
| 123 | cac | aat | gac | tat | atg | tgc | cca | gca | acc | aat | cag | tgt | act | att | gac | agg | 756  |
| 124 | His | Asn | Asp | Tyr | Met | Cys | Pro | Ala | Thr | Asn | Gln | Cys | Thr | Ile | Asp | Arg |      |
| 125 |     |     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |      |
| 126 | aat | cgg | aga | aag | agc | tgc | cag | gct | tgc | cgt | ctt | agg | aag | tgt | tat | gaa | 804  |
| 127 | Asn | Arg | Arg | Lys | Ser | Cys | Gln | Ala | Cys | Arg | Leu | Arg | Lys | Cys | Tyr | Glu |      |
| 128 |     |     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |      |
| 129 | gtg | ggc | atg | atg | aaa | gga | ggg | gtt | cgc | aag | gac | cgt | ggc | cgt | gtt | ttg | 852  |
| 130 | Val | Gly | Met | Met | Lys | Gly | Gly | Val | Arg | Lys | Asp | Arg | Gly | Arg | Val | Leu |      |
| 131 |     |     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |      |
| 132 | cgc | cgt | gat | aaa | cga | cgt | gct | gga | acc | aat | gac | cga | gag | aag | gcc | tct | 900  |
| 133 | Arg | Arg | Asp | Lys | Arg | Arg | Ala | Gly | Thr | Asn | Asp | Arg | Glu | Lys | Ala | Ser |      |
| 134 |     | 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     |      |
| 135 | aag | gac | ctg | gag | tac | aaa | aca | gtg | ccc | cct | cag | gac | agg | agg | aaa | cac | 948  |
| 136 | Lys | Asp | Leu | Glu | Tyr | Lys | Thr | Val | Pro | Pro | Gln | Asp | Arg | Arg | Lys | His |      |
| 137 | 160 |     |     |     |     | 165 |     |     |     |     | 170 |     |     |     | 175 |     |      |
| 138 | agc | agc | agc | agc | agt | gcc | ggg | ggg | gga | gga | gga | aaa | tca | tca | gtg | acc | 996  |
| 139 | Ser | Ser | Ser | Ser | Ser | Ala | Gly | Gly | Gly | Gly | Gly | Lys | Ser | Ser | Val | Thr |      |
| 140 |     |     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |      |
| 141 | ggg | atg | tct | cct | gac | cag | gtg | ctc | ctc | ctg | ctc | cag | ggg | gcc | gag | ccc | 1044 |
| 142 | Gly | Met | Ser | Pro | Asp | Gln | Val | Leu | Leu | Leu | Leu | Gln | Gly | Ala | Glu | Pro |      |
| 143 |     |     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |      |
| 144 | cca | atg | ctg | tgc | tcc | cgt | cag | aag | ctg | agc | cga | ccg | tac | acc | gag | gtc | 1092 |
| 145 | Pro | Met | Leu | Cys | Ser | Arg | Gln | Lys | Leu | Ser | Arg | Pro | Tyr | Thr | Glu | Val |      |
| 146 |     |     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |      |
| 147 | acc | ata | atg | aca | cta | ctc | acc | agc | atg | gcc | gat | aag | gag | ctg | gtc | cac | 1140 |
| 148 | Thr | Ile | Met | Thr | Leu | Leu | Thr | Ser | Met | Ala | Asp | Lys | Glu | Leu | Val | His |      |
| 149 |     | 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     |      |
| 150 | atg | atc | acc | tgg | gcc | aag | aag | ctt | cca | ggg | ttc | ctg | cag | ctg | tct | ctc | 1188 |
| 151 | Met | Ile | Thr | Trp | Ala | Lys | Lys | Leu | Pro | Gly | Phe | Leu | Gln | Leu | Ser | Leu |      |
| 152 | 240 |     |     |     |     | 245 |     |     |     |     | 250 |     |     |     | 255 |     |      |
| 153 | cat | gac | cag | gtg | cag | ctg | ctg | gag | agc | tcg | tgg | ctg | gag | gtg | ctg | atg | 1236 |

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|-----|-------------|------------|------------|-------------|-------------|------------|-----|-----|-----|-----|-----|-----|------------|--------|-----|-----|------|
| 154 | His         | Asp        | Gln        | Val         | Gln         | Leu        | Leu | Glu | Ser | Ser | Trp | Leu | Glu        | Val    | Leu | Met |      |
| 155 |             |            |            |             | 260         |            |     |     |     | 265 |     |     |            |        | 270 |     |      |
| 156 | att         | ggg        | ctc        | ata         | tgg         | agg        | tcc | atc | cac | tgc | ccc | ggc | aaa        | ctc    | atc | ttc | 1284 |
| 157 | Ile         | Gly        | Leu        | Ile         | Trp         | Arg        | Ser | Ile | His | Cys | Pro | Gly | Lys        | Leu    | Ile | Phe |      |
| 158 |             |            |            | 275         |             |            |     |     | 280 |     |     |     |            | 285    |     |     |      |
| 159 | gca         | cag        | gac        | ctc         | ata         | ctg        | gac | agg | aat | gaa | ggg | gac | tgt        | gtg    | gaa | ggc | 1332 |
| 160 | Ala         | Gln        | Asp        | Leu         | Ile         | Leu        | Asp | Arg | Asn | Glu | Gly | Asp | Cys        | Val    | Glu | Gly |      |
| 161 |             |            | 290        |             |             |            |     | 295 |     |     |     |     | 300        |        |     |     |      |
| 162 | ttt         | gtt        | gag        | atc         | ttc         | gac        | atg | ctg | ctg | gcc | act | gcc | tcc        | cgc    | ttc | cgc | 1380 |
| 163 | Phe         | Val        | Glu        | Ile         | Phe         | Asp        | Met | Leu | Leu | Ala | Thr | Ala | Ser        | Arg    | Phe | Arg |      |
| 164 |             | 305        |            |             |             |            | 310 |     |     |     |     | 315 |            |        |     |     |      |
| 165 | atg         | ctc        | aaa        | ctc         | aaa         | cct        | gag | gag | ttt | gtc | tgc | ctc | aaa        | gct    | atc | atc | 1428 |
| 166 | Met         | Leu        | Lys        | Leu         | Lys         | Pro        | Glu | Glu | Phe | Val | Cys | Leu | Lys        | Ala    | Ile | Ile |      |
| 167 | 320         |            |            |             |             | 325        |     |     |     |     | 330 |     |            |        | 335 |     |      |
| 168 | ctg         | ctc        | aac        | tct         | ggg         | gcc        | ttc | tct | ttc | tgc | acc | ggc | aca        | atg    | gag | ccc | 1476 |
| 169 | Leu         | Leu        | Asn        | Ser         | Gly         | Ala        | Phe | Ser | Phe | Cys | Thr | Gly | Thr        | Met    | Glu | Pro |      |
| 170 |             |            |            | 340         |             |            |     |     | 345 |     |     |     |            | 350    |     |     |      |
| 171 | ctc         | cac        | aac        | agc         | atg         | gca        | gtg | cag | aac | atg | ctg | gac | acc        | atc    | aca | gac | 1524 |
| 172 | Leu         | His        | Asn        | Ser         | Met         | Ala        | Val | Gln | Asn | Met | Leu | Asp | Thr        | Ile    | Thr | Asp |      |
| 173 |             |            |            | 355         |             |            |     |     | 360 |     |     |     |            | 365    |     |     |      |
| 174 | gct         | ctc        | ata        | cat         | cat         | atc        | agc | caa | tca | gga | tgc | tcg | gct        | cag    | cag | cag | 1572 |
| 175 | Ala         | Leu        | Ile        | His         | His         | Ile        | Ser | Gln | Ser | Gly | Cys | Ser | Ala        | Gln    | Gln | Gln |      |
| 176 |             |            | 370        |             |             |            |     | 375 |     |     |     |     | 380        |        |     |     |      |
| 177 | tcg         | agg        | cgg        | cag         | gcc         | cag        | ctg | ctg | ctc | ctg | ctc | tcc | cac        | atc    | agg | cac | 1620 |
| 178 | Ser         | Arg        | Arg        | Gln         | Ala         | Gln        | Leu | Leu | Leu | Leu | Leu | Ser | His        | Ile    | Arg | His |      |
| 179 |             | 385        |            |             |             |            | 390 |     |     |     |     | 395 |            |        |     |     |      |
| 180 | atg         | agc        | aac        | aaa         | ggc         | atg        | gag | cat | ctc | tac | agc | atg | aag        | tgc    | aag | aac | 1668 |
| 181 | Met         | Ser        | Asn        | Lys         | Gly         | Met        | Glu | His | Leu | Tyr | Ser | Met | Lys        | Cys    | Lys | Asn |      |
| 182 | 400         |            |            |             |             | 405        |     |     |     |     | 410 |     |            |        | 415 |     |      |
| 183 | aaa         | gtg        | cct        | ctt         | tac         | gac        | ctt | ctg | ctg | gag | atg | ttg | gac        | gct    | cac | cgt | 1716 |
| 184 | Lys         | Val        | Pro        | Leu         | Tyr         | Asp        | Leu | Leu | Leu | Glu | Met | Leu | Asp        | Ala    | His | Arg |      |
| 185 |             |            |            | 420         |             |            |     |     |     | 425 |     |     |            | 430    |     |     |      |
| 186 | ata         | cac        | cgc        | cca         | gac         | aga        | cca | gct | cag | ttc | tgg | tcc | cag        | gct    | gac | gga | 1764 |
| 187 | Ile         | His        | Arg        | Pro         | Asp         | Arg        | Pro | Ala | Gln | Phe | Trp | Ser | Gln        | Ala    | Asp | Gly |      |
| 188 |             |            |            | 435         |             |            |     |     | 440 |     |     |     |            | 445    |     |     |      |
| 189 | gag         | cct        | ccc        | ttc         | att         | aac        | aac | aac | aac | agc | agc | aac | agt        | ggc    | agc | aat | 1812 |
| 190 | Glu         | Pro        | Pro        | Phe         | Ile         | Asn        | Asn | Asn | Asn | Ser | Ser | Asn | Ser        | Gly    | Ser | Asn |      |
| 191 |             |            | 450        |             |             |            |     | 455 |     |     |     |     | 460        |        |     |     |      |
| 192 | ggc         | ggc        | gtc        | tcc         | tct         | tca        | gtc | ggg | tcc | agt | tca | gga | ccc        | cga    | gtc | aac | 1860 |
| 193 | Gly         | Gly        | Val        | Ser         | Ser         | Ser        | Val | Gly | Ser | Ser | Ser | Gly | Pro        | Arg    | Val | Asn |      |
| 194 |             | 465        |            |             |             |            | 470 |     |     |     |     | 475 |            |        |     |     |      |
| 195 | cac         | gag        | agc        | ccg         | agc         | aga        | gga | ccc | aca | ggg | cca | gga | gtc        | ctg    | cag | tac | 1908 |
| 196 | His         | Glu        | Ser        | Pro         | Ser         | Arg        | Gly | Pro | Thr | Gly | Pro | Gly | Val        | Leu    | Gln | Tyr |      |
| 197 | 480         |            |            |             |             | 485        |     |     |     |     | 490 |     |            |        | 495 |     |      |
| 198 | gga         | ggg        | tcc        | cgc         | tct         | gac        | tgc | acc | cac | atc | cta | tga | ggccgagcac | aacaaa |     |     | 1960 |
| 199 | Gly         | Gly        | Ser        | Arg         | Ser         | Asp        | Cys | Thr | His | Ile | Leu |     |            |        |     |     |      |
| 200 |             |            |            | 500         |             |            |     |     | 505 |     |     |     |            |        |     |     |      |
| 201 | catctgaagg  | tcaaaagtaa | tttttacaga | tgatgtgtgt  | tgtacagaat  | gaaagctaaa |     |     |     |     |     |     |            |        |     |     | 2020 |
| 202 | ggttgatattt | taattaattt | catgagataa | ttattttataa | attaagtgtat | tttatagttg |     |     |     |     |     |     |            |        |     |     | 2080 |

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203 taactgtttt agggagtttt ttttcctttg cactaatcta gttcactaca acacgagctt 2140
204 caatgcaggc aatctactat gctgcctttc ataatatctg tgattctgag tgagtacagc 2200
205 ttaatttttc caggtgttag gtcataattgt ggcactcagc tatgggtgatt tgaaatgaca 2260
206 agcagctaata ttgcctttgt atttgccctca accaaagtgc acttcttctt gggttttattg 2320
207 ggcattgttt ttactttttac atattgggat taggatgatc agacactaaa ctatgataaaa 2380
208 aaacaggttc aatgaatgt gtgattttatt ttgtgtttaa attccaacat cattaaagag 2440
209 cctgaacgtc aggtattgtg tcttaagcgt gcacgcaaac tttaaacttc tggaaaacaa 2500
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212 tttcacaact ttattgttgg gtaacttcac cacatccagc tttttgtgaa tggtaggttt 2680
213 gttctgtagg ctacatgca caagagtttt ttttctgaat ttgagatatt ttatgtgtgt 2740
214 ctgcaagaga aagactgaga aatctgagga aatttgctat aagtggccct aagctttcta 2800
215 tcttgatgca gttcagaatt tcaaaatgtt actattcatc cactaattca gtgattacat 2860
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222 cctcccatga acagttgttc agtcacaggt ttgtcacaca ggtagaacaa tctgttaata 3280
223 tactgaaaaa aaggccagag gttgacgtgt agagaatgtt gccagaatac aaatgataaa 3340
224 caaagatctg tgccacttaa acaagaatgg aaagcctcta tacagggtca ggaaactgga 3400
225 tttggacact tgaagtgcaa gtcaaacctg acctgtcatc tgtttactgt gcataaaaat 3460
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236 atgaaaggag gtgttcgcaa ggaccgtggc cgtgttttgc gccgtgataa acgacgtgct 180
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**VERIFICATION SUMMARY**

PATENT APPLICATION: US/10/501,227

DATE: 08/18/2005

TIME: 16:46:40

Input Set : A:\600630-21US Seq List.txt

Output Set: N:\CRF4\08182005\J501227.raw